Massachusetts Department of Environmental Protection
Source Water Assessment and Protection (SWAP) Report
For
Hutchinson Water Company

What is SWAP?

The Source Water Assessment and Protection (SWAP) program, established under the federal Safe Drinking Water Act, requires every state to:

? Inventory land uses within the recharge areas of all public water supply sources;

? Assess the susceptibility of drinking water sources to contamination from these land uses; and

? Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Date Prepared:
December 17, 2003

Table 1: Public Water System (PWS) Information

PWS Name	Hutchinson Water Company
PWS Address	Hutchinson Road
City/Town	Cheshire, Massachusetts
PWS ID Number	1058001
Local Contact	Mr. Ralph Hutchinson
Phone Number	(413) 743-5713

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well # 4	1058001-04G	307	933	Moderate
Well # 5	1058001-05G	310	1070	Moderate

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential sources of contamination, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

The Hutchinson Water Company serves a small residential community in the Town of Cheshire, Massachusetts, a small town in northern Berkshire County. The Water Company serves 120 homes with a total population of approximately 400 people and is located in the south end of Town, east of Cheshire Reservoir, the headwaters of the Hoosic River. There is a municipal water system in Cheshire, but there is no municipal wastewater disposal available. All facilities in Cheshire utilize on-site septic disposal. The municipal water system is located in the center of town and does not serve this area. The Water Company maintains and operates three water supply wells (Wells #2, #4 and

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

#5). Well #1 was abandoned and decommissioned in 1972. Wells #3 and #4 were used simultaneously until Well #3 collapsed. Well #3 was abandoned and decommissioned after Well #5 was installed to replace Well #3. Well #2 is maintained as an emergency supply source but is severed from the system due to high nitrate levels in the water. The source of nitrates in the gravel aquifer utilized by Well #2 is believed to be the adjacent agricultural activity. Presently, Wells #4 and #5 operate as the active well for the system and they operate simultaneously. Only Wells #4 and #5 will be addressed in this report.

Wells #4 and #5 are located east of the community, approximately 250 feet from the nearest residence and are located within 50 feet of each other. Well #4 was installed in 1979 and is a 155-feet deep, 6-inch diameter bedrock well with an approved withdrawal rate of 24,000 gallons per day (17 gpm) based on previous metered water use. Well #5 installed in 1997, is a 300 feet deep, 8-inch diameter well with 80 feet of casing set into the bedrock. The pumping test for Well #5 indicated the well and aquifer had a capacity of approximately 45 gallons per minute but well #5 was approved for a withdrawal rate of only 21 gpm as a replacement for Well #3.

Geologic mapping of the area indicates deep stratified drift deposits of sand and gravel west of the wells, in the Cheshire Reservoir/Hoosic River valley. Information from the owner indicates the depth of Well #2 is approximately 250 feet drilled into sand and gravel. These deposits were laid down during the recession of the glaciers some 18,000 years ago. Recent alluvial has likely been laid down in the center part of the valley where Cheshire Reservoir and the Hoosic River are located. The upland areas are generally covered with relatively thin till over bedrock although the side slopes may have varying thickness of overburden on top of the bedrock. Mapping indicates till over bedrock in the vicinity of Wells #4 and #5 although thin deposits of sand and gravel are evident from the mining operations nearby. Well #5 was constructed with 80 feet of casing set into bedrock. The bedrock is mapped as a metamorphic rock, the Cheshire Quartzite.

The Zone I is the area immediately surrounding the well and the Interim Wellhead Protection Area, (IWPA) provides an interim protection area for a water supply well when the actual recharge area has not been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA. There is a hydrogeologic barrier (clay layer) at least in the immediate vicinity of the well. However, unless this hydrogeologic barrier is known to exist throughout the IWPA, the aquifer is considered to have a high vulnerability to contamination. Nonetheless, the hydrogeologic barrier that does exist provides some protection relative to impeding the downward migration of

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Non-conforming Zone I	-	-		Contact DEP prior to increasing the system or conducting any additional activities in Zone I.
Residential Fuel Storage Above Ground	Both Wells	Both Wells	Moderate	Proper maintenance and upgrades to fuel oil tanks to prevent releases from occurring
Lawn Care/Gardening	Both Wells	Both Wells	Moderate	Encourage residents in proper storage, disposal, and application of pesticides.
Transportation Corridor	Both Wells	Both Wells	Moderate	Fuels and other hazardous materials: accidental leaks or spills; pesticides: over-application or improper handling

*** -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400-foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

contaminants from areas overlying the barrier. The wells operate simultaneously but either well could supply the entire demand of the system. The Zone I and IWPA for Well #4 are 307 feet and 933 feet, respectively based on metered water use. The Zone I and IWPA for Well #5 are 310 feet and 1,070 feet, respectively based on pumping test data and the previous withdrawal rate of Well #3, the well that Well #5 replaced. Since the protection radii are similar and the wells are so close together, the protection areas for Wells #4 and #5 essentially overlap. Please refer to the attached map of the Zone Is and IWPAs.

Water from the wells serving the facility is not treatment at this time. The DEP requires public water suppliers to monitor the quality of the water. For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1 for a copy of the most recent Consumer Confidence Report. Drinking water monitoring reporting data is also available on the web via EPA's Envirofacts website at http://www.epa.gov/enviro/html/sdwis/sdwis_query.html.

2. Discussion of Land Uses in the Protection Areas

There are a number of land uses and activities within the drinking water supply protection areas that are potential sources of contamination.

Key issues include:

1. **Non-conforming Zone I;**
2. **Residential Land Uses; and**
3. **Transportation Corridor.**

The overall ranking of susceptibility to contamination for the well is moderate, based on the presence of at least one moderate threat land use or activity in the IWPA, as seen in Table 2.

1. Non-conforming Zone I – Currently, the wells do not meet DEP's restrictions, which only allow water supply related activities or other non-threatening activities within the Zone Is. The Zone Is contain approximately seven residences including driveways, roads, parking spaces, residences and associated septic systems. Systems not meeting DEP Zone I requirements must notify the DEP, receive approval and address Zone I issues prior to increasing water use or modifying systems. In the recent past, there has been some truck traffic in Zone Is to access the adjacent gravel pit. The owner has prohibited the traffic.

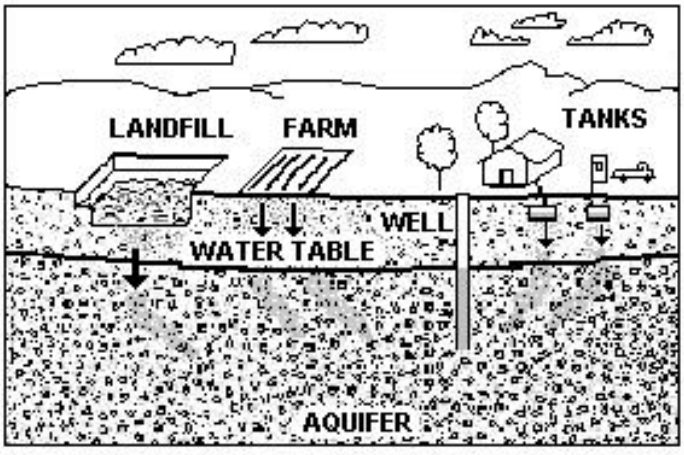

Figure 1: Example of how a well could become contaminated by different land uses and activities.

Recommendations:

- ✓ Based upon the current location of homes it may not be possible to prohibit vehicle parking within Zone Is; however, the company should consider educating residents' efforts to controlling activities in the Zone Is relative to fuel usage and use of household hazardous materials.
- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone Is.
- ✓ Consider efforts to have residents convert to propane or maintain tanks through tank age limitations and new tank standards.
- ✓ Consider replacing the wells if the gravel removal operation encroaches on the wells.

2. Residential Land Uses – The community served by the water company utilizes on-site septic disposal. There are approximate 60 residents within the protection areas. If managed improperly, activities associated with residential

For More Information:

Contact Catherine Skiba in DEP's Springfield Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at: www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been made available to the public water supplier and town boards.

areas can contribute to drinking water contamination. Common potential sources of contamination include:

- **Septic Systems** – Improper disposal of household hazardous chemicals to septic systems is a potential source of contamination to the groundwater because septic systems lead to the ground. If septic systems fail or are not properly maintained, they could be a potential source of microbial contamination.
- **Household Hazardous Materials -** Hazardous materials may include automotive wastes, paints, solvents, pesticides, fertilizers, and other substances. Improper use, storage, and disposal of chemical products used in homes are potential sources of contamination.
- **Heating Oil/Kerosene Storage** - If managed improperly, Underground and Aboveground Storage Tanks (USTs and ASTs) can be potential sources of contamination due to leaks or spills of the fuel oil/kerosene they store. Require fuel lines to be sleeved to protect from leaks.
- **Stormwater** – Catch basins transport stormwater from roadways and adjacent properties to the ground. As flowing stormwater travels, it picks up debris and contaminants from streets and lawns. Common potential contaminants include lawn chemicals, pet waste, and contaminants from automotive leaks, maintenance, washing, or accidents.

Residential Land Use Recommendations:

- ✓ Educate residents on best management practices (BMPs) for protecting water supplies. Distribute the fact sheet "Residents Protect Drinking Water" available in Appendix A and on the following DEP website www.mass.gov/dep/brp/dws/protect.htm, which provides BMPs for common residential issues.
- ✓ Promote BMPs for stormwater management and pollution controls.
- ✓ Consider a bylaw requiring that replacement heating/hotwater systems not be fueled by fuel oil or kerosene. Encourage maintenance of those tanks that exist and encourage conversion to propane.
- ✓ Continue efforts to manage wastewater disposal and maintenance of the systems.

3. Transportation Corridor – Minor roads and residential parking can be potential sources of contamination due to salting of roadways and leaks or spills of fuel and other hazardous materials during accidents. In addition, there has, in the past, been traffic within the Zone I to access the adjacent gravel pit.

Recommendation:

- ✓ Contact the local fire department to ensure that the IWPA is included in Emergency Response Planning.
- ✓ Continue to prohibit access through Zone Is.
- ✓ Consider replacing the wells if the gravel removal operation encroaches on the wells.

The Water Company is commended for recent measures taken to secure and protect the well casings and for prohibiting access through the Zone Is. Implementing the following recommendations will reduce the system's susceptibility to contamination.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the wells' susceptibility to contamination. The facility should continue efforts in water supply protection through reviewing and adopting the key

recommendations above and the following:

Zone I:

- ✓ Keep non-water supply activities out of the Zone Is.
- ✓ Restrict use of salt within Zone Is and drain stormwater away from the wells.
- ✓ Continue to prohibit access to the Zone Is.
- ✓ Conduct regular inspections of the Zone Is.
- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone Is.
- ✓ Consider well relocation if gravel operations encroach significantly on the wells.

Facilities Management:

- ✓ Provide residents with Best Management Practices (BMPs) for the use of fertilizer, herbicides and pesticides on properties.
- ✓ For utility transformers that may contain PCBs, contact the utility to determine if PCBs have been replaced. If PCBs are present, urge their immediate replacement. Keep the area near the transformer free of tree limbs that could endanger the transformer in a storm.

Planning:

- ✓ Work with local officials in town to include the facility's IWPAs in Aquifer Protection District Bylaws and be sure local emergency responders are aware of the protection areas in the event of an accident in the area.
- ✓ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- ✓ Encourage residents to maintain and upgrade wastewater disposal systems.

Funding:

The Department's Wellhead Protection Grant Program provides funds to assist public water suppliers in addressing wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the "Wellhead Protection Grant Program". If funds area available, the Department posts a new Request for Response for the Grant program (RFR). Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" at the following DEP website: http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to encourage discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Areas